Aquatic Predator/Prey Survival Lesson

Time: 45min

Location: Outdoors, or indoors in a large space like a gym

Materials:

Fish models or pictures (one predator and one prey species)

• Food tokens (laminated colored paper, game chips, or plastic bugs to represent food- 5 per student)

• 4-5 Hula-hoops or other structures to symbolize shelters

• 4 cones or natural structures to symbolize boundaries

Vocab to Discuss:

• Camouflage- Disguising one's appearance to hide from others

• Countershading-camouflage pattern in animals, darker on top (dorsal side), lighter on bottom (ventral side)

• Ecosystem- Community of organisms that interact together in a specific environment

• Habitat- Place in the environment where an organism naturally thrives

• Predator- Animal that eats another animal for food

• Prey- The animal that is taken for food by another

• Schooling-fish swimming in same direction in a coordinated matter

Next Generation Science Standards:

Cross-cutting concepts: Patterns; Cause & Effect; Stability & Change

Science & Engineering Practices: Constructing Explanations; Engaging in argument from evidence

Disciplinary Core Ideas: LS2: Ecosystems: interactions, energy & dynamics

- Tell students we are going to learn about some fish that live in the type of water right around us and that there will be a game to simulate the predator-prey relationship in an Ecosystem. (discuss definition of ecosystem here)

- Predator-Prey Distinction
    - 1. Introduce a predator fish species and discuss:
        - a. Types of food it eats
        - b. How it obtains the food
        - c. Where in the water the fish lives based on body shape and colorings
    - 2. Introduce prey fish species and discuss:
        - a. Types of food it eats
        - b. How it obtains the food
        - c. Where in the water the fish lives based on body shape and colorings

    - 3. Ask:
        - Why do you think this fish has stripes or other markings? What do you think they are used for? (discuss camouflage)
        - Why do you think the fish is dark on the top and light on the bottom? (discuss countershading)
        - What is a predator? Is this fish a predator?
        - What is a prey species? Is this fish a prey species?

Introduce the game:

- The field will represent a waterbody near or around the location.
- There are two types of fish, one the predator and one the prey. For example, the cutthroat trout can take on the role of the predator while the fathead minnow can take on the role of the prey species.
- Participants will represent the prey species and the facilitator (or one participant who has demonstrated good behavior thus far) will be the predator.
- Explain that the object of the game is for each player to cross the water to the other side, pick up ONE food item (tokens) and make it back to your nest or home and back to the food area.
- The catch is that the predator is out there, lurking, trying to “eat” or tag its prey.
- There are 3-5 hula-hoops out in the water that represent shelter areas where the fish likes to hide; i.e. for freshwater: aquatic plants, stumps, and fallen trees.
- You can stop there to escape the predator on your journey to obtain food. You are not allowed to stay there for more than 5 seconds. The predator won’t “babysit” the safe areas.
- There is no running, only “swimming” where everyone’s feet must stay on the ground at all times. Have students practice “swimming.”
- The predator must also “swim” this way.
- Remind players they must swim to the other side and grab ONE piece of food and make it back to their nests.
- Players will repeat the process until the food is gone. If a player goes out of bounds (as marked by cones), starts running, or is tagged, then that player is out and must sit on the side until another round of play.
- Ask if there are any questions.
- After the first round, play a second round with 1 or 2 more predators.

After the Game:

- Ask students to raise hands to indicate who collected one piece of food, two pieces of food, and so on.
- Ask students what might happen to the fish that didn't obtain any food.
    - Was it easier to stay alive when you were swimming in a school? Rather than by yourself?
    - Was the round with more predators harder or easier than the first round? Why? What about in nature?

- Review questions for discussion
    - Q: Define predator, define prey
        - A: A predator is an animal that obtains food by the killing of another animal, while a prey is an animal that is taken for food by another.
    - Q: What are some characteristics of prey species that help them escape from predators?
        - A: schooling, fast moving, spiny dorsal fin, camouflage, countershading
    - Q: What are some characteristics of predator species that help them catch prey?
        - A: schooling, fast moving, camouflage, countershading, teeth
    - Q: What is structure and how do fish use it to escape predators?
        - A: shelter that fish use to hide from predators: rocks, plants, docks, etc.
    - Q: What is an ecosystem?
        - A: A community of organisms that interact together in a specific environment

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